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मानक

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Mazdoor Kisan Shakti Sangathan

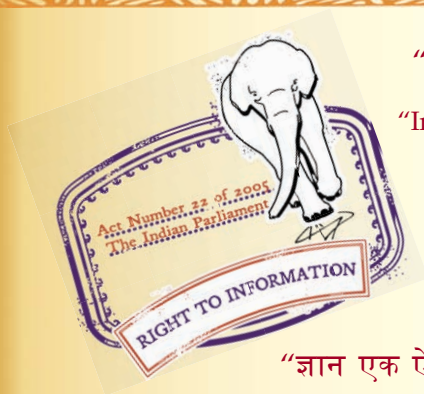
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8712-7 (1985): Guidelines for Coordination of Dimensions in Shipbuilding, Part 7: Coordinating Sizes for Fixtures, Fittings and Equipment [TED 17: Shipbuilding]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

(Reaffirmed 2005)

GUIDELINES FOR COORDINATION OF DIMENSIONS IN SHIPBUILDING

PART 7 COORDINATING SIZES FOR FIXTURES, FITTINGS AND EQUIPMENT

1. Scope — Gives recommendations for the coordinating sizes of fixtures, fittings and equipment used on board ship in order to integrate these items within dimensionally coordinated accommodation spaces.

1.1 The standard includes information on the anthropometric and ergonomic dimensions which relate to the items under consideration (see Fig. 4 and 5).

2. Definitions — For the purpose of this standard the definitions given in IS : 8712 (Part 2)-1978 'Guidelines for coordination of dimensions in ship building: Part 2 Glossary of terms' shall apply.

3. Guidelines for Selection of Coordinating Sizes

3.1 In order to achieve the coordination of dimensions, it is necessary first to reduce the number of possible sizes that are to be used, that is, a selection of sizes must be made. The method given in IS : 8712 (Part 3)-1978 'Guidelines for coordination of dimensions in shipbuilding: Part 3 Coordinating sizes for components and assemblies' is to recommend the use of particular units of sizes, or modules, and multiples of these modules for the coordinating dimensions of components or assemblies.

3.2 Further variety reduction is obtained by standardizing the principal vertical and horizontal dimensions within the accommodation, such as deck-to ceiling height or length and width of cabins. These dimensions are termed controlling dimensions and are covered in IS : 8712 (Part 4)-1977 'Guidelines for coordination of dimensions in ship building: Part 4 Controlling dimensions'.

3.3 Within the restrictions imposed by the use of the standard modules and controlling dimensions, it is necessary to select a range of the sizes for modular components which most conveniently meet the requirements found from the survey for the particular item. The selection may be made in accordance with IS : 6772-1972 'Recommendations for dimensional coordination for industrialized buildings—Preferred increments'.

Note — Minimum sizes mentioned in Merchant Shipping (Crew Accommodation) Rules, 1960 as amended from time to time, applicable for different ship sizes should be noted while selecting the coordinating sizes according to this Indian Standard.

4. Coordinating Sizes for Fixtures, Fittings and Equipment

4.1 The space allocated to an individual component (including an allowance for joints and tolerances for manufacture and sitting) is termed as coordinating space and the dimensions of this space are termed coordinating dimensions. The coordinating dimensions defining the spaces are for length, width, depth and height and the ranges of sizes allocated to these dimensions are determined within the restrictions outlined in 3. Further reference to joints and tolerances is made in 6.

4.2 Coordinating sizes for individual components are given in Table 1. The ranges of coordinating sizes are derived to provide mean coverage of the ranges of sizes most frequently encountered in the survey of existing ship outfits. All possible combinations of length, width, depth and height given in the table may be used.

4.3 The coordinating dimensions defining the spaces, particularly the height of a working top, must have regard to ergonomic and anthropometric considerations and the heights may require variation to accord with the particular function of the component, or the type of person to whom this is related. Figure 4 gives anthropometric data for guidance in these considerations and Fig. 5 shows the application of such data to working heights.

4.4 Within certain component coordinating spaces, allowance must be made for toe space, and it is recommended that for those components requiring provision of toe space this should be 100 mm in height and 50 mm in depth.

5. Component Ranges

5.1 Within the ranges of coordinating sizes given in Table 1, certain particular sizes can be identified as being of greater significance in terms of dimensional coordination because of frequency of use, economic production or flexibility of assembly.

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IS : 8712 (Part 7) - 1985

5.2 Table 1 indicates the coordinating sizes which are intended to be the restricted series for each component to cover most of the existing range of dimensions and should form the nucleus of any range proposed for manufacture. All combinations of length, width, depth and height given in the table may be used.

5.3 Reference has been made in 3.3 to techniques that can assist in achieving flexibility for components, but it is also often possible to increase the flexibility of a limited range of components by the use of infill pieces or by 'makeup' jointing techniques, and it is recommended that attention is paid to these methods when component sizes are considered (see Fig. 1).

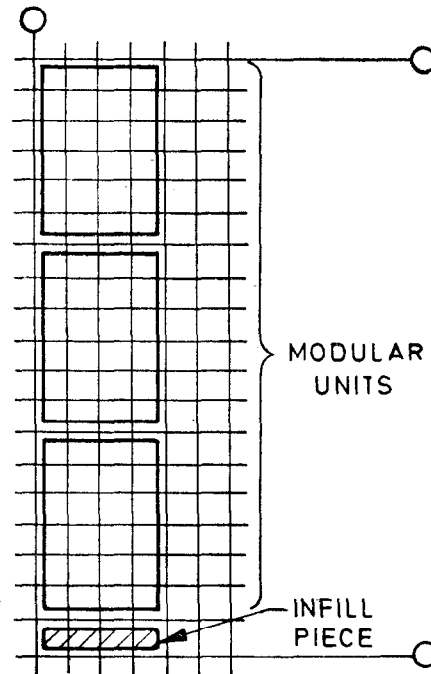


FIG. 1 USE OF INFILL PIECES

5.4 In selecting a range of sizes for a component it should be noted that the sizes given in Table 1 are the coordinating sizes. In some instances a situation may arise in which a built-in unit is placed on or attached to unfinished elements of the structure, and hence extends past the key reference plane which defines the finished surface of the floor, bulkhead, ceiling, etc. The size of the component must therefore include this extra size in addition to the coordinating size (see Fig. 2).

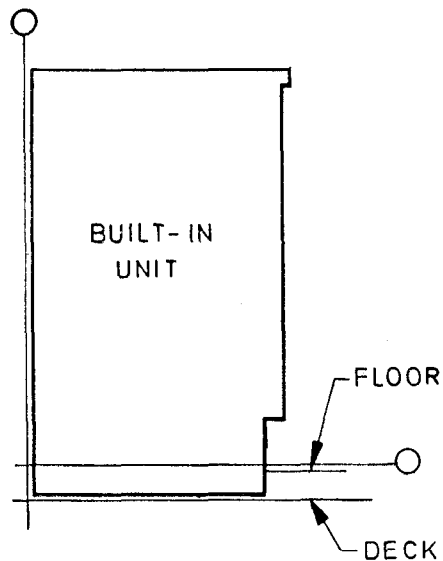


FIG. 2 SELECTION OF COORDINATING SIZE

5.5 This situation, which may involve either an addition to or subtraction from the coordinating size is termed a boundary condition and, where possible, is identified in the tables of coordinating spaces and component ranges.

Note — An example of a boundary condition is where built-in units are fitted to the deck before the flooring is laid.

6. Manufacturing Sizes — Coordinating sizes include allowances for the joints between components and for the deviations involved in component manufacture, setting out and assembly. In order to ensure that all manufacturers produce compatible sizes, it is necessary to use an agreed procedure for determining work sizes and joint clearances. Reference may be made to IS : 6408-1971 'Recommendations for modular coordination — Application of tolerances in building industry' and in view of the commonality of certain components it is proposed to adopt similar procedures for the shipbuilding industry and to recommend simplified methods for determining work sizes (see Fig. 3).

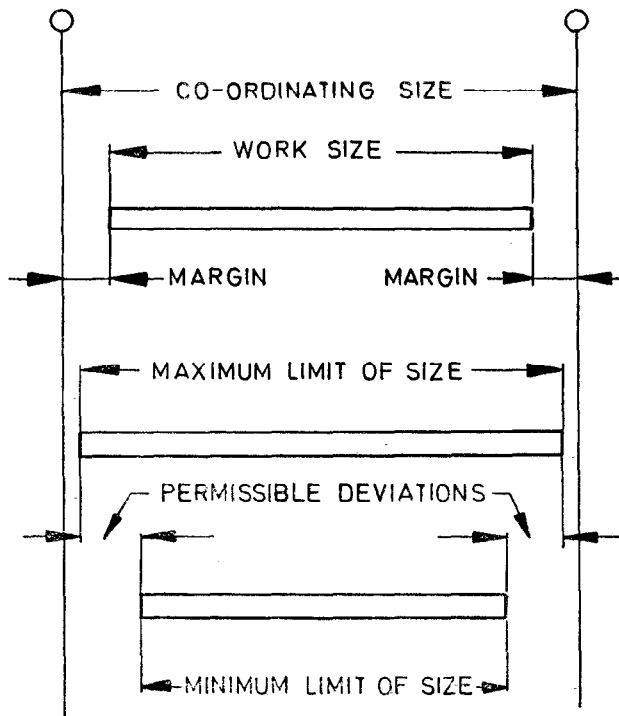


FIG. 3 DETERMINATION OF WORK SIZES

TABLE 1 COORDINATING SIZES FOR INDIVIDUAL COMPONENTS

(Clauses 4.2, 5.1, 5.2 and 5.4)

All dimensions in millimetres.

The following conventions are used in the table to indicate the degree of coordination intended for the component dimensions.

$n \times 50$ Any multiple of 50 mm, where n is any natural number including unity

$n \times 100$ Any multiple of 100 mm

600 Sizes given in the tables indicate the proposed range of sizes for a particular dimension

600 Sizes which are underlined indicate the preferred sizes

Note 1 — All combinations of length, width, depth, and height may be used.

Note 2 — Boundary conditions may apply where camber and sheer is present and may also be dependent upon the form of construction at deck or deckhead.

Components	Length	Width	Depth	Height	Remarks
Access panels		$n \times 50$ 400 600		$n \times 50$ 400 600	Height relates to size of panel and also to height above deck
Access panels (ceiling)	$n \times 100$ 600 700 800 1 200	$n \times 100$ 800 900 1 000			
Auditorium seating (cinema, lecture room) Width of seats		$n \times 50$ 450 500 550			Minimum without arms Minimum with arms
Auditorium seating (cinema, lecture room) Spacing of rows			$n \times 50$ 750 <i>Min</i> 900 950		
Baths (all types)	$n \times 50$ 1 400 1 550 1 700 1 750 1 850	$n \times 50$ 700 750 800 850		$n \times 50$ 550 600 650	
Bath panels	$n \times 50$			$n \times 50$	Relates to bath sizes
Beer keg (stowage below bar)		$n \times 100$ 400 500	$n \times 100$ 400 500	$n \times 50$ 600 700	20 litres* 50 litres*
Beer cooler (flash)		$n \times 100$ 600	$n \times 100$ 500	$n \times 50$ 300	
Beer pump		$n \times 50$ 150	$n \times 50$ 150	$n \times 50$ 900	Space requirement for pressurizing cylinder and connections
Bidets		<u>400</u>	650 <u>700</u>	<u>400</u>	
Blackboards		$n \times 100$ 1 200 2 400		$n \times 50$ 1 000 1 200	Mounted in relation to eye levels
Blinds, curtains and screens		$n \times 100$ 600 700 800 900 1 000		$n \times 50$ 800 850 900 950 1 000 1 050 1 100	Related to window box sizes, and internal or external fitting; mounted in relation to window position

*Sizes relate to individual kegs stored vertically.

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TABLE 1 COORDINATING SIZES FOR INDIVIDUAL COMPONENTS—Contd
(Clauses 4.2, 5.1, 5.2 and 5.4)

Components	Length	Width	Depth	Height	Remarks
Bottle shelves (refrigerated)	$n \times 100$	$n \times 100$ 600		$n \times 50$ 100 150	Related to bar counters and fittings
Cinema screens		$n \times 100$ 1 200 1 300 1 400 1 500 1 600		$n \times 100$ 1 200 1 300 1 400 1 500 1 600	Mounted position related to projector position, seating arrangements, etc
Clothes hooks		$n \times 50$ 150 200		$n \times 100$ 1 600 1 700	Height relates to mounted position above deck
Cookers, ovens, etc					See galley equipment
Curtains					See blinds, curtains and screens
Directional signs		$n \times 50$ 300		$n \times 50$ 100	Mounted in relation to eye levels
Door handles				1 000	Height of centre of handle above deck
Food preparation					See galley equipment and pantry equipment
Galley equipment (cookers, ovens, mixers, etc)		$n \times 100$ 600 900 1 200 1 500 1 800	$n \times 100$ 600 700 800 900	$n \times 100$ 850 900	
Galley fittings (benches, sink units, dressers, etc)		$n \times 100$ 600 700 900 1 200 1 500 1 800	$n \times 100$ 500 600 700 800 900	$n \times 50$ 850 900	
Galley wall fittings (cupboards, racks, etc)		$n \times 100$ 1 200 1 500 1 800	$n \times 100$ 300 400 500	$n \times 50$ 400 500 600	Height and mounted position related to eye level, height of reach, etc 1 500 minimum to underside of wall fittings; 1 900 minimum to top of wall fittings
Grilles, hatches and shutters		$n \times 100$ 400 500 600 900 1 200		$n \times 50$ 500 600 700 800 900 1 000	Height related to bar counters, serving and mess counters and ceiling heights
Hardware					See door handles clothes hooks, towel rails and storm rails
Hatches					See grilles, hatches and shutters
Ironing board		300		900	
Laundry equipment (washing machines, dryers, tumblers, etc)		$n \times 100$ 600 700 800 1 000	$n \times 100$ 600 700	$n \times 50$ 900	

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TABLE 1 COORDINATING SIZES FOR INDIVIDUAL COMPONENTS — *Contd*
(*Clauses 4.2, 5.1, 5.2 and 5.4*)

Components	Length	Width	Depth	Height	Remarks
Medical locker		$n \times 100$ 1 500	$n \times 100$ 600	$n \times 50$ 2 000	Interior to comply with statutory requirements
Mirrors		$n \times 100$ 300 400		$n \times 100$ 400 500 600 1 200	Mounted in relation to eye levels
Mosaic tiles		$n \times 100$ 300		$n \times 100$ 300	In combination to form panels of modular size
Nameplates		150		25	
Navigation equipment (radar, telegraphs, display panels, etc)		$n \times 100$ 600 700	$n \times 100$ 600 700 800 900	$n \times 100$ 900 1 000	Individual equipment
		$n \times 50$ 150 200 250 300	$n \times 50$ 150 200 250 300		Display panels in consoles
Notice boards		$n \times 100$ 600 900 1 200		$n \times 100$ 600 900	Mounted position related to eye level
Ovens, cookers					See galley equipment
Pantry equipment (hot presses, etc)		$n \times 100$ 600 900 1 200	$n \times 100$ 600 700	$n \times 50$ 850 900	
Pantry fittings (benches, sink units, dressers, etc)		$n \times 100$ 600 700 900 1 200 1 500 1 800	$n \times 100$ 500 600 700 800	$n \times 50$ 850 900	
Pantry wall fittings		$n \times 100$ 600 900 1 200	$n \times 100$ 300 400	$n \times 50$ 400 500 600	Height and mounted position related to eye level, height of reach, etc 1 500 minimum to underside of wall fittings; 1 900 minimum to top of wall fittings
Pelmets		$n \times 100$ 600 700 800 900 1 000	$n \times 50$ 100	$n \times 50$ 100 150	Related to single window box sizes, curtains and blinds; mounted in relation to window position
Racks (galley and pantry)		$n \times 100$ 900 1 200 1 500 1 800	$n \times 100$ 300 400 500	$n \times 50$ 1 500 <i>Min</i> to under- side of wall fittings	Height and mounted position related to eye level, height of reach and position of other equipment and fittings
Radio, recordplayer and TV storage		$n \times 100$	$n \times 100$ 600 800	$n \times 50$ 300 450 600 750	

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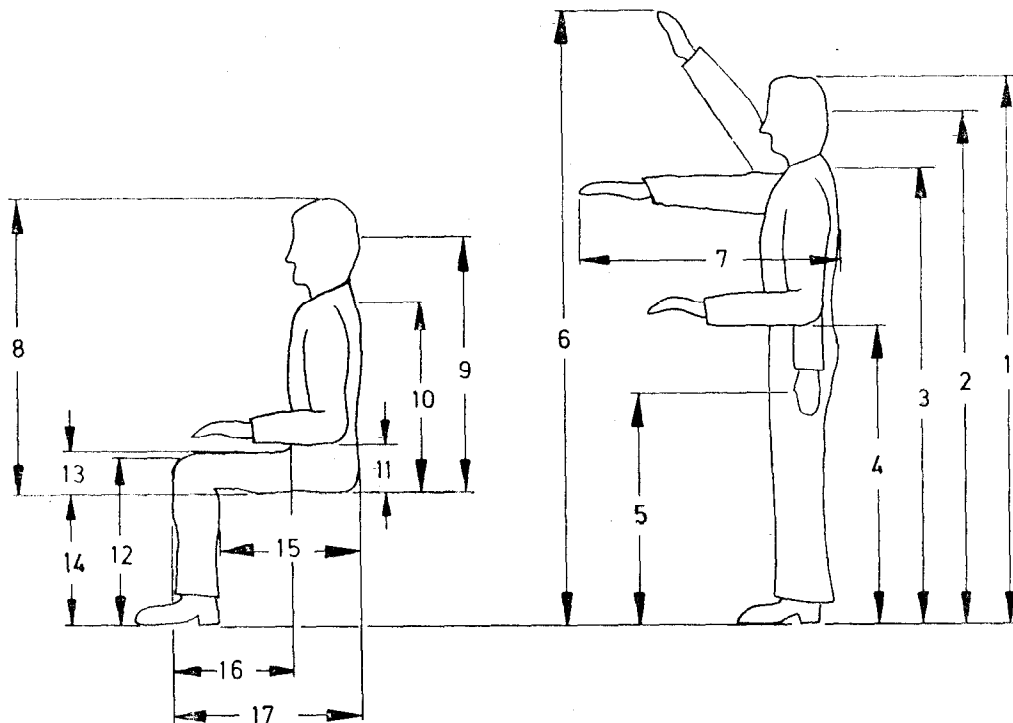
TABLE 1 COORDINATING SIZES FOR INDIVIDUAL COMPONENTS — Contd
(Clauses 4.2, 5.1, 5.2 and 5.4)

Components	Length	Width	Depth	Height	Remarks
Rails (storm, towel, balustrade, etc)	$n \times 100$ 600	$n \times 50$ 100 150		$n \times 50$ 1 000	Width relates to overall distance from bulkhead; height to centre of rail; section of hand rails to suit ergonomic considerations
Refrigerators		$n \times 100$	$n \times 100$	$n \times 50$	
Screens					See blinds, curtains and screens or cinema screens
Shelving (storage)	$n \times 100$	$n \times 100$ 300 400 600		$n \times 50$	Height related to ergonomic considerations, for example, height or reach, eye level, etc
Shower cubicles	$n \times 100$ 750 Min 800 900	$n \times 100$ 750 Min 800 900		$n \times 50$ 1850	Height related to head or ceiling heights
Shower trays	$n \times 100$ 750 Min 800 900	$n \times 100$ 750 Min 800 900		$n \times 50$ 100 150 200	
Shower fittings				2 000	Height of rose above internal base level
				1 200	Height of sprinkler control above internal base level
Shutters					See grilles, hatches and shutters
Skirting board		$n \times 100$		$n \times 50$ 100	
Slop sink		$n \times 100$ 500	$n \times 50$ 550	$n \times 50$ 550	
Storm rails					See Rails
Stretcher locker		$n \times 100$ 300	$n \times 100$ 300	$n \times 100$ 1 800	
Telephone booths (acoustic)		$n \times 100$ 500 800	$n \times 100$ 500 600	$n \times 100$ 500 800 1 900	Clear head height
Telephone kiosks		$n \times 100$ 700 800	$n \times 100$ 700 800	$n \times 50$ 2 000	
Toilet cabinets		$n \times 100$ 300 400 500 600	$n \times 50$ 100 150 200	$n \times 100$ 400 500 600	Mounted in relation to eye levels
Towel rails					See rails
Tumbler driers					See laundry equipment
Urinals, ranges		$n \times 600$ 600 1 200 1 800	$n \times 50$ 300 400	$n \times 100$ 1 200	Overall height
Wall tiles		100 200		100	

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TABLE 1 COORDINATING SIZES FOR INDIVIDUAL COMPONENTS — *Contd*(*Clauses 4.2, 5.1, 5.2 and 5.4*)

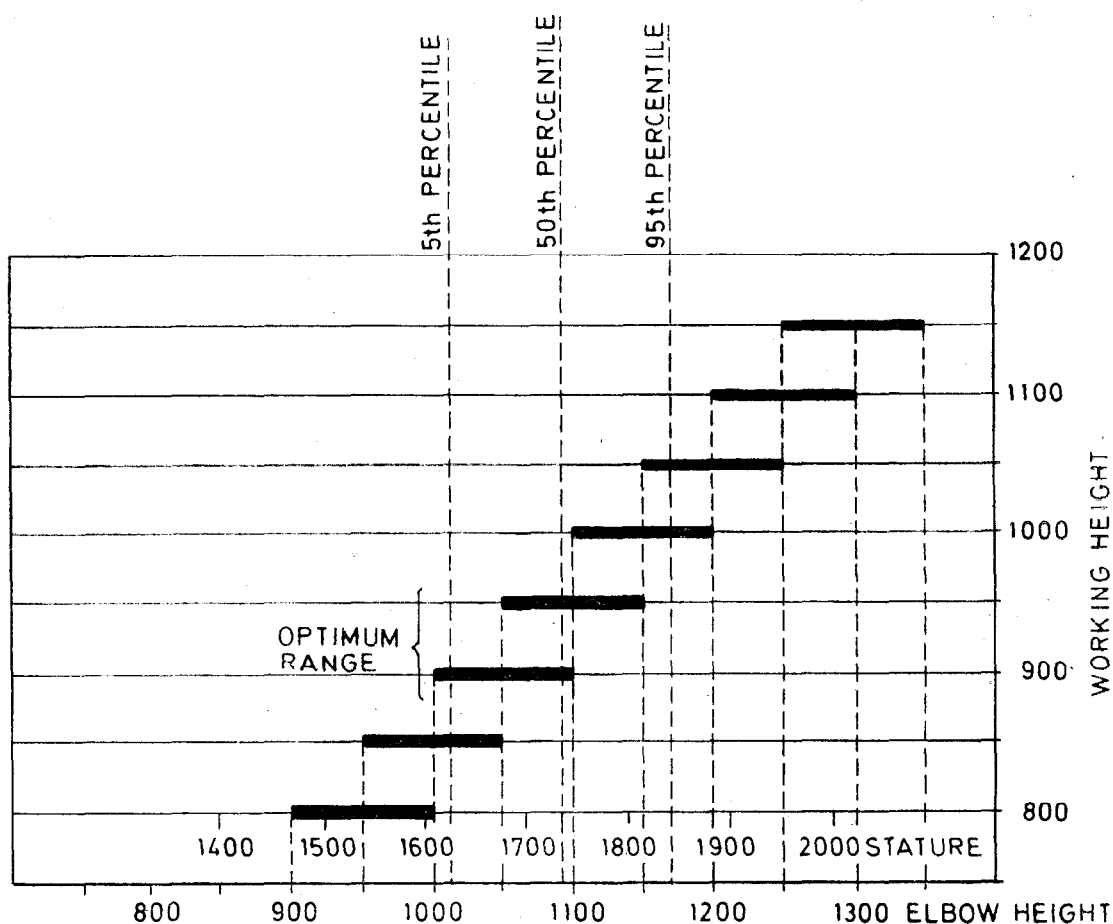
Components	Length	Width	Depth	Height	Remarks
Wash basins		$n \times 50$ 400 450 500 550 600	$n \times 50$ 300 350 400 450 500	800 850	Height to rim
Wash basins (corner fitting)	$n \times 50$ 450 500 550	$n \times 50$ 450 500 550		800 850	Height to rim
Wash tubs and sinks		$n \times 100$ 600 700 800	$n \times 100$ 500 600 700	$n \times 50$ 800 850	Height to rim
Washing machines					See laundry equipment
Water closets		$n \times 50$ 350 400	$n \times 50$ 650 700 750	$n \times 50$ 400 450 500	
WC cubicles	$n \times 100$ 1 500 1 600 1 700 1 800	$n \times 100$ 750 <i>Min</i> 800 900		$n \times 50$ 1 850	
Wireless equipment		$n \times 100$	$n \times 100$	$n \times 50$	



	Male			Female		
	Percentiles			Percentiles		
	5th	50th	95th	5th	50th	95th
<i>Standing</i>						
1. Stature	1 628	1 738	1 845	1 550	1 655	1 760
2. Eye level	1 525	1 632	1 742	1 455	1 560	1 665
3. Shoulder height	1 328	1 428	1 528	1 260	1 360	1 460
4. Elbow height	1 015	1 095	1 172	965	1 045	1 120
5. Hand (knuckle) height	705	770	838	660	735	815
6. Reach upwards	1 970	2 100	2 260	1 810	1 945	2 075
7. Reach forwards	772	848	922	635	705	775
<i>Sitting</i>						
8. Height above seat level	840	900	960	795	850	905
9. Eyes above seat level	725	785	844	695	750	800
10. Shoulder above seat level	535	585	635	500	555	605
11. Elbow above seat level	180	225	270	160	210	255
12. Top of knees above floor	505	550	600	475	525	575
13. Thigh clearance	125	150	175	125	150	175
14. Underside of thigh above floor	402	435	468	395	430	460
15. Rear of buttocks to back of calf	435	478	520	425	465	505
16. Abdomen to knees	335	385	435	325	375	420
17. Rear of buttock to knees	568	615	660	530	575	620

All dimensions in millimetres.

FIG. 4 ANTHROPOMETRIC DATA (BASED ON DATA FOR CAUCASIAN ADULTS INCLUDING ALLOWANCE FOR CLOTHING)



Note — Work benches and work tops are related to 100 to 200 mm below elbow height.

All dimensions in millimetres.

FIG. 5 ERGONOMIC DATA — WORKING HEIGHTS OF BENCHES AND WORK TOPS FOR MALE ADULTS

EXPLANATORY NOTE

This standard is one of a series of Indian Standards on dimensional coordination in shipbuilding. Other Standards in the series are:

IS : 8712-Guidelines for coordination of dimensions in shipbuilding:

Part 1 Principles of dimensional coordination

Part 2 Glossary of terms

Part 3 Coordinating sizes for components and assemblies

Part 4 Controlling dimensions

Part 5 Coordinating spaces for internal sub-division

Part 6 Coordinating spaces for furniture

Part 8 Coordinating size for services

In the preparation of this standard considerable assistance has been derived from BSMA 73-1976 'The coordination of dimensions in shipbuilding: Coordinating sizes for fixtures, fittings and equipment', issued by the British Standards Institution.